Advance Algorithms in DL

Intro - Spring 2022

AW

Instructor

Prof. Alexander Wolpert

- Webpage: https://www.roosevelt.edu/academics/faculty/profile?ID=awolperts.roosevelt.edu/wolpert/
- Email: awolpert@roosevelt.edu
- Office hours:
  - Th 3:30 pm - 4:30 pm or till I served everyone who signed for the day
  - You must let me know that you plan to come on W anytime before 10pm, so that I can plan office hours. I will take you no matter how many students are coming but I may tell you to come say 4:15 if a few students signed before you.
  - I will also take you on Tue if I can, but it isn't your day so if there are many students from other classes I may tell you that I can't take your appointment. To come Tue you must tell me of your plans on M.
- Are tutors available for the course?
  - No

Class Info

- **Class is Face-to-Face.**
  - **No Zoom or recordings for this class**
- BB course site is the place to go. You can find there
  - Syllabus section that contains
    - syllabus, and textbook
  - Assignments section contains HW (whenever posted)
  - Programming assignments also in Assignments section - contains specification, and implementation hints
  - Weekly lessons section is where by the end of the week I post slides that were used in class during the week

Attendance

- Attendance of class sessions is mandatory. Attendance is taken every session.
- But COVID is still rampant, so you can miss class 3 times per semester if you really need to – no questions asked.
- Missing more than 3 sessions without my approval may result in serious sanctions – up to getting failing grade in the course.
- You must either medical note or my pre-approval for missing classes beyond the allowed 3
- If you believe that you have to miss a class beyond given allowance and you have no doctor-confirmed medical reason for it, you must get my pre-approval. Initial request for pre-approval must come *before missing the class!*
  - serious, documented extenuating circumstance is needed to get pre-approval, e.g. 'I have to be at work' will **not be considered a valid reason**, unless there is a written request from your supervisor with explanation of reasons for it.

Homework

- Six homework assignments (see the schedule in the syllabus). But it may change depending on class progress (could become 7 or 5)
- All homework assignments are posted on Fr by 6pm and (unless I explicitly state otherwise) are due at the end of the day on the following Th; no late homework will be accepted.
  - Submission through Blackboard in ONE FILE – no multiple jpegs please.
  - If you submit total projects then they must be zipped into one .zip file. Or you can submit just the source in one file

Assessment – Exams, HWs, Programming HWs

- Three exams (open-book).
  - 2 midterm exams: 70 pts
  - A cumulative final exam: 100 pts.
  - 6 HWs: points vary from 6 to 15pts
  - 3 relatively extensive programming HWs 10 to 20 pts
- Class graded on accumulated points

Schedule of Exams and HWs

Exams	Dates
Midterm 1	02/24, 2:00 pm – 3:15 pm
Midterm 2	04/07, 2:00 pm – 3:15 pm
Final exam	05/03, 2:00 pm – 4:30 pm

Prog. HW	Assign	Due
Pr-1	2/18	3/17
Pr-2	3/18	4/07
Pr-3	4/01	4/22

P&P HW	Assign	Due
HW-1	01/28	02/03
HW-2	02/11	02/1
HW-3	03/04	03/17
HW-4	03/25	03/31
HW-5	04/08	04/14
HW-6	04/22	04/29

Note that I may change any aspect of the course including due dates and exam dates depending on class progress

Textbooks

Required text:

Charu Aggarwal. Neural Networks and Deep Learning: A Textbook. Springer, 2018. 978-3030068561. https://link.springer.com/book/10.1007/978-3-319-94463-0

Recommended texts:

1. Ian Goodfellow, Yoshua Bengio, Aaron Courville. Deep learning. MIT press, 2016, 978-0262035613. Also freely and legally available on the web https://www.deeplearningbook.org/
2. Francois Chollet. Deep Learning with Python. Manning, 2018, 978-1617294433.

   The book itself will be used rarely if ever but accompanying github site that is freely and legally available on the net is very useful https://github.com/fchollet/deep-learning-with-python-notebooks

Software

Two options

1. You run everything on your computer. Then you need installed
   - Anaconda with Python 3.8
   - Inside Anaconda/Python need environment with installed Tensorflow/Keras
   - Recommended IDE is PyCharms, but you can use whichever you are comfortable with.
   - Can use Jupyter notebook but will need to create respective environment

   For installation instructions and more see 'Software and Programs' section of BB site
2. You run everything on google colab.
   - You still need to edit python code on your computer and then upload to Google Colab.
   - You must have Google Drive to have data there
   - For more details see 'Software and Programs' section of BB site

Grading

- Weighted fraction of the grade:
  - Homework assignments – approximately 1/3
  - Exams – approximately 2/3
- Conversion of accumulated % into letter grades:

	A≥93%	A^-≥89%
B^+≥87%	B≥82%	B^-≥79%
C^+≥76%	C≥70%	C^-≥ 65%
D^+≥55%	D≥50%	F<50%

Gradebook

- You will see your grades in the Gradebook at Blackboard.
- Use % calculation chart to see where you stand at any point in time during the semester

Prerequisites

Undergrads

- Programming class – CST 150 CS I
- Sets, lists, graphs, etc. – Math245
- Linear Algebra - Math 246

- Additional knowledge by topic: exponent, logarithm, derivative (not specifically listed because precalculus is prereq to Math 246)

Grads

- Either BS CS degree (must have had courses) or bridge courses:
  - CST 354 (= CST 150)
  - CST 280 (>=Math 245)
- Grads who had Bachelors in other areas than CS may not have Linear Algebra - will cover whatever needed on request
- Additional knowledge – grads whose Bachelors not in CS may not have it. Will cover on request

Python

- Many have not had Python – will learn on the fly by copy paste method
- In addition will post few intro Jupyter notebooks (mine from Python class) that can be used to learn on your own
  - You will have to study them independently if you never had python exposure. Luckily it is all the same as in Java
- Will answer all questions with respect to Python